George's Pink Pages

Illinois State Beekeepers Talk - June 19,1999

You can't keep bees like Daddy kept bees! I want you to notice that word "kept". Anybody can "have" bees on their property today, and buy some more when those die; and I am concerned with that vast number who can't seem to KEEP their bees today. The package bee producers surely have learned what new techniques and management changes are needed to keep bees alive and healthy, or they would be in some other line of work today. I am talking about CHANGING TIMES; and I am specifically challenging you to accept the need to change your present management techniques if you have the desire to UPGRADE yourself from a beeHAVER to a beeKEEPER!

I started beekeeping on May 6, 1933, sixty six years ago, just two months after attending the Presidential Inaugural Ceremony for Franklin Delano Roosevelt in Washington, DC. I am sure that most of the people in this audience are not even 66 years old; and hence, I am going to confine my CHANGING TIMES to the changes in the past 25-30 years, and I want to rapidly mention some things that should be familiar to all of you. Most of you are wearing a watch that has a quartz movement which keeps almost perfect time, a far cry from the expensive 21 jewel watch of 30 years ago that didn't keep very good time anyhow. Perhaps most of you enjoy CABLE tv to your home that did not exist 30 years ago. When was the last time you went to a drive-in movie - maybe 30 years ago. Think about the present Yugoslavia situation and our ALL VOLUNTEER ARMY of today, compared to being drafted into the army 30 years ago or become a draft dodger. Most of you drove a vehicle to this bee meeting and your vehicle probably has front-wheel drive only matching the Cadillac Eldorado of 30 years ago, disk brakes instead of drum brakes, fuel injection instead of a carburetor, radial tires rather than bias tires, and gasoline was only 30-35 cents per gallon in 1970. I have two beekeeper friends who have had kidney transplants, a surgical procedure unknown 30 years ago. Did you have a computer, a microwave oven in your kitchen, or VCR machine 30 years ago? Most of you have these things now. There were few birth control pills in use 30 years ago, and condums surely were NOT displayed at the grocery store checkout counter as they are today. In 1970, you had to constantly HOE your garden to keep the weeds down, whereas today many crops are made from hybrid "no-till" seed. My mother died 3 years ago at age 99, and I miss her tremendously, because she used to transcribe my speeches about atomic energy or bees from her perfect use of Gregg Shorthand that is probably unknown today. TIMES CHANGE, and difficult or not, either you learn to adapt to these changes or you become out-of-step with success.

Now, let us think about apis mellifera, our honey bee. WOW! Let us look at the findings or happenings of just the past 15 years that have profoundly forced changes in honey bee management procedures. In 1984, the TRACHEAL MITE, acarapis woodi, was first found in the U.S.; and three years later, 1987, the more dangerous mite was found, the VARROA MITE, varroa jacobsoni. Three years later, 1990, the dreaded Africanized Honey Bee, apis mellifera scutellata, crossed the Rio Grande from Mexico into Texas and today, just 9 years later, it has been found in four other states, Arizona, New Mexico, California, and Nevada. Many people on the east coast or midwest took the attitude of: "So what, they are not in my backyard or a nearby state, so I don't have to worry about the AHB". When the tabloid magazines coined the term "killer bee" and Hollywood

produced exaggerated and totally false movies about the AHB, beekeepers all over the U. S. suddenly found than almost every living person was "allergic" to a single bee sting and in the interest of their personal safety started actions to create laws forbidding beekeeping in their town, their county, or even their state. The urban population of today compared to the era of our parents knows nothing about bees and really DON'T WANT TO KNOW - just keep them some place else, but "not in my backyard". Anyone of these happenings,much less ALL of them, dramatically forces one to give up any idea of "keeping bees just like Daddy kept bees" because Daddy did not have any of these things to contend with.

In contrast with all these new problems that have come to light in the past couple of decades, I want to mention some favorable things that have been found during this same time. In spite of the difficulty of funding money for research, the problems caused by mites, Africanized Bees, and public fear of being stung has forced the researchers, scientists, extension agents, inspection service to be more specific about securing gentle bees, swarm reduction, requeening with a honey bee race rather than with hybrids or allowing the bees to requeen themselves. These very things are encouraging people to learn more about good beekeeping. I want to make a prediction about beekeeping in the 21st century that, as a scientist, I find very exciting and wish I were young again to get back into research. The prediction is: research will discover more and more importance of honey bee PHEROMONES, and armed with this increased knowledge of the function of these pheromones, the result will be better beekeeper management, improved handling techniques, healthier bees and higher crop yields. I am jealous of that future that perhaps I will never see.

WHAT ARE THE ABSOLUTE NECESSITIES TO MAKE A GOOD HONEY CROP?

A) A very large number of foraging age bees available at the nectar flow time
B) Elimination of the conditions that cause swarming
C) A surplus amount of drawn comb on the colony just before the start of the nectar flow
D) Healthy bees with little or no mites, nosema free, young vigorous queen

Some people have difficulty because they don't plan ahead, and suffering a lack of knowledge about bee BEHAVIOR, they really don't do much for their bees until the first sign of dandelions. They are about 6 months too late to guarantee a good season. Years ago, Dr. Roger Morse wrote in one of his many books that "the proper planning for the next season commences in September". I have been using September as the bee's New Year for many years, because my total honey crop in Maryland is produced very early in the spring and is finished by about June 1st. I am positive that the honey yield in the Illinois area is somewhat different, starting later and lasting longer, but those facts don't change any of the absolute necessities to make a good crop! Therefore, let me detail these management techniques from a September starting point until the following September.

REQUEENING - I much prefer September requeening than spring requeening, because the queen arrival date at my house can be predicted months in advance, the queens have much better open breeding because there are more drones in the later summer, and the queen breeders are not under that intense spring pressure of getting lots of queens delivered "yesterday". Further, perfectionist that I am, the Imirie Requeening Method guarantees almost 100% acceptance and it has both the old queen and the new queen laying in the same colony for about 6 weeks which

builds a large group of young worker bees to enter the winter inactive season. I have a separate paper detailing the IMIRIE REQUEEN METHOD that you can have today.

Recent bee research has proven that in addition to the egg laying ability of a queen, the production of the queen pheromone is of vital importance in swarm prevention. The pheromone is the "glue" that has the ability to bind thousands of worker bees into one single functioning unit; but the production of that pheromone diminishes a little each day of the queen's life from the day of her mating. Hence, although a second season queen might well be able to produce 1500 eggs per day, but not being able to produce an adequate amount of queen pheromone to bind this large number of workers into a single functioning unit, the bees swarm, thereby making two units: the swarm in a new location leaving a new queen and some bees back at the "old homestead". It has been shown that a second season queen is three times more apt to swarm than a first season queen. Because of Maryland's very early honey crop, 51 years ago,1948, Steve Tabor convinced me to switch from the Italian race I had used for the first 15 years of beekeeping to Carniolans, who are renouned for their "explosive" early spring buildup. Unfortunately, the Carniolan is equally well known for its high propensity to swarm, and successful honey cropping with Carniolans almost dictates never allowing a queen to live longer than 12-13 months.

Apistan Use for Killing Varroa Mites - One should thoroughly understand the Varroa life cycle to properly control the degree of colony infection with the Varroa mite.Unlike the tracheal mite which lives almost its entire life internally in an adult bee, the Varroa mite is born in a bee larva, matures to adulthood nursing itself from a bee pupa, and than lives externally on a bee's body. Hence, the greater the number of honey bee larva and pupa available, the greater there is a source of food for the varroa mite to multiply. In contrast, there is very little honey bee larva available in the later fall months of October and November or the winter months of December and January. One can get a 95% kill of mites rather easily, but securing a100% kill is next to impossible, and therefore, we are always going to have mites, year after year, and contolling their growth is a year around program and probably is not going to get any better. Since the best timeto kill the most mites is when there is little or no bee larva for mite food, obviously the most effective varroa mite kill time is October and November.

Hence, I install 4 apistan strips, 2 in each of the 2 brood chamber boxes, on October 1st, leave them for 8 weeks, and remove them in time to eat Thanksgiving turkey. I am well known in Maryland as a vigilante, because if I find that some beeHAVER or even a beeKEEPER has gotten lazy or forgotten to remove the Apistan strips and left them in the colony for the winter, he gets my 3 hour lecture in public; because we certainly don't want to make the mites resistant to Apistan because of over exposure to the fluvalinate chemical in the strip. Prior to my strokes, guilty people could not walk away from my chastisement, because I would follow and continue my beratement, and no body was going to punch an old man with glasses and a college letter in boxing. Now they are safe, because I can't even talk, much less YELL. Strokes and Old Age will be the death of me yet.

Bee research has shown that varroa mite growth is temperature dependent meaning that it those states with the least winter and cold months, the Varroa mite growth is enhanced. Honeybee colonies in Florida or Texas might have to be treated with Apistan twice or even three times a year, whereas, in the Illinois area, assuming the fall Apistan treatment is done at the correct time for 8

weeks, maybe the one treatment might be enough for the year. But don't be lazy or unknowing about the degree of mite infestation of your colonies. In March and again in July, TEST for mites using either the ether roll test or the sticky board test, BUT TEST! If you find too many mites, cease your honey production temporarily and treat with Apistan for perhaps just two weeks so your bees don't die. There are many, many cases in print that a colony of bees that had been treated the previous year with Apistan, made a record crop of honey in late spring and early summer and was dead from Varroa mite infection in August. Gosh, you test yourself with a thermometer for a fever, the doctor tests your blood pressure, the optician tests your eyes, the vet tests your dog for worms, you treat your plants and vegetables for disease, why not test your bees for mites that are going to kill the bees if you don't control the mites? I repeat for clarity: Without testing, I treat my bees with Apistan strips for 8 weeks beginning October 1st, I test for Varroa mite infection on March 1st and July 1st and treat right then for 2-6 weeks if indicated. I know of case after case of gready beekeepers who didn't want to lose a single ounce of that quick crystalizing fall honey and did not get a good Apistan treatment done, and the bees died of mite infection. One beekeeper fumed and cussed about having to buy more bees next year, and I clapped and laughed in his face and told him "It serves you right, because you cared more about a few measly dollars than you did for the health of your bees!"

Building a population of foraging age bees by nectar flow time - The great majority of apian followers don't understand that from the day a worker bee egg is layed, 40 days (almost 6 weeks) elapses before that worker bee makes it first nectar collecting flight! 40 DAYS! Why? The gestation period of the honey bee is 21 days, and its genetically programmed life has it doing "house duties" like comb building, nursing larva, pollen packing, ripening nectar into honey, and serving guard duty at the hive entrance for the first 18 days of life before it ever makes its first nectar collecting flight which occurs on the 40th day since its egg was layed. For example, in Maryland, if the black locust bloom opens on April 25th, the egg of that bee that forages for that black locust nectar had to be layed 40 days or more before, or March 15th when there might be snow on the ground and baseball season had not opened yet. If you came to this meeting to LEARN, and I hope you did, then don't you ever forget the importance of this particular 40 days that may decide the yield of your honey crop.

Most people don't understand how you get a queen laying eggs in cold weather like February. Let me shock you! The queen does NOT make that decision. Her daughters, the worker bees, make almost all colony decisions and they totally control the queen's actions by how much they feed her, how much comb they build, and how many cells they clean and polish to receive her eggs! Further, worker bees won't do any of these things until there is available pollen and nectar for food. In walks Mr. Smart Beekeeper, who creates an artificial nectar flow by feeding 1:1 sugar syrup (1 pound of plain sugar dissolved in 1 pint of water) and even supplies a pollen substitute like Mann Lakes Bee Pro. When these artificial nectar and pollen substitute are put in a hive as I do about February 1st, the worker bees are fooled in to thinking early spring is here, the nectar flow that will supply them with next winters food supply is close at hand, so we gals better wake up our queen and get her laying eggs in a bigtime way. They start eating large quantities of the 1:1 sugar syrup (ignoring all that stored honey that is like emergency "hard tact" compared to thin delicious nectar - You did not know that nectar is the bees choice of food rather than honey, did you?) This raises the body temperature of the bees so they can warm the brood area to the maternity room desired temperature of 91-96 degrees, start "stuffing food down the queen's gullet" which activates

the queen's egg production apparatus, and finally cleaning and polishing cells for the queen to inspect and then lay eggs. Early spring population increase has been started in the cold of February and snow may be all over the hive tops!

Research has not only shown but positively proven that the number one cause of swarming is brood chamber congestion! Please note that I did not say a word about additional space or super space - I repeat: brood chamber congestion! I cannot explain God's reasoning, but God genetically programmed the queen to always travel UP, never down. (As the winter approaches, the bees stop feeding the queen so she can't lay eggs and they start packing the upper frames of comb with honey stores for winter, which drives the "tired" queen down in colony to rest for a month or so before spring laying starts). Now we are back to early spring egg laying in February. When the queen finishes laying the center frames of the 1st story, using the chimney effect of warming, she moves up into the second story frames for more egg laying. If she lays out the most of the center of the 2nd story and the inner cover stops her from going further UP, even though the first story might be totally empty or stuffed with pollen, the bees SWARM because of brood chamber CONGESTION. Just imagine the chaos of a 2 bedroom home for a family that has 5 or 6 small children. That is congestion!

A smart beekeeper prevents this congestion by REVERSING the brood chambers 2,3, or 4 times in the spring as needed to move the frames the queen is presently laying DOWN so she can move UP as those cells in the second story are made empty by emerging bees. Dependent on the weather, colony strength, and ability of the queen, the first reversal might have to made in 3 weeks after 1:1 feeding is initiated, and that time shrinks as the weather warms and hive population increases; but it is constantly done until the nectar flow gets well started and supers are in place. You will note that because the bees can only "incubate" the eggs and larva by clustering around it to provide warmth, all of this effort is done around only the center frames and as the weather warms and the bee population increases, the cluster can extend its "incubation" space to include more of the frames closer to the outer hive walls. There is no way that a mentor can tell a beekeeper when to reverse because each hive is a different enity in a different weather condition; and hence, a beekeeper must understand the principle of reversing and make his own decisions. The major mistake always made is to reverse too soon and thereby SPLIT the brood into two divided parts, so that one part of the brood is close to the inner cover while the other half is close to the hive floor. The bees will cluster where ever the queen is and not being able to cover both divided parts of brood, one part is kept warm and the other part dies of cold. To help you visualize this, look at the face of a wall clock and imagine that the bottom frame covers the area DOWN from the numbers 9 and 3, and the upper frame covers the area UP from the numbers 9 and 3. Suppose the the total area of space between the 10 and 8 and between the 2 and 4 was fresh open brood, and you reversed at that time. The lower frame with brood above the line drawn between 8 and 4 would now be the upper frame putting that brood close to the inner cover; but that former upper frame with brood DOWN from a line between 10 and 2 would now be a lower frame and that brood would be close to the hive floor. You have SPLIT THE BROOD and one part will die and one part will live. The ideal time to reverse (rarely possible) would be when ALL of the brood is above the line drawn between 9 and 3, and after reversal all of the brood is below the line drawn between 9 and 3.

WHEN, and HOW, to INSTALL SUPERS OF DRAWN COMB for EXTRACTED HONEY The use of foundation or anything that requires comb building necessitates a totally different program. Again, I want you to LEARN that you cannot use foundation as if it were empty drawn comb, nor can you mix foundation and drawn comb frames in the same super without bad results.

When a nectar flow commences and improves, swarming season is OVER and the bees mentally shift programs from swarming for reproduction purposes to nectar collecting to make honey for winter feed. However, if there is not enough super space for the bees to store all this thin watery nectar (maybe 20 pounds per day) until they have time to ripen the nectar to thick, heavy honey, they are going to SWARM. A swarm during a nectar flow is the 100% FAULT of the beekeeper in failing to provide enough super space when needed; and is totally different than a swarm in swarming season which is caused by brood chamber conjestion. In Maryland, I know that a nectar flow is going to get underway sometime in mid to late April, so I put one super of drawn comb in place about April 1st followed by 4 more supers of drawn comb put on ALL AT ONE TIME before May 1st Research has proven that the hoarding instinct of bees makes the presence of lots of empty drawn comb a challenge to the bees and they work harder and faster and hence produce a better yield than having empty drawn comb supers added one at a time as needed.. Why do I have 5 supers of drawn comb installed before May 1st when the bees only make maybe 4 full supers of honey in a good year? Bees do NOT collect heavy, thick honey, but collect thin, maybe 80% water nectar than takes up lots of super space until the bees can ripen it into thick honey, and these extra supers provide that storage space which aids in swarm prevention.

How to install supers of foundation. - This program requires less supers for the same amount of honey, but requires more labor time and more inspection to establish the need for more another super. Bees have to eat about 8 pounds of honey to develop the energy necessary to produce and build one pound of wax comb. Bees, in their genetic way, can't think like humans and do things in the same manner as their ancestors did back with Adam and Eve in the Garden. All bees work within the limits of what we call BEE SPACE, the discovery of Dr. Langstroth that caused him to develop the first removable frame hive. Bee Space is about 5/16", which is travel space for a bee, meaning they will build comb or fill up spaces smaller than 1/4" or larger than 3/8". This concept is very important in drawing foundation into comb. Even if you prefer and use only 9 frames in a body, you must use all 10 frames of foundation to build the comb, or you will have a mess because you violated "bee space". This is also the same reason that you cannot mix drawn comb frames in a super with sheets of foundation, or you cannot install 4 or 5 supers of foundation all at the same time, because the bees will build comb in the strangest of places and you will have one great big mess that you cannot separate. The only proper way to install foundation is to put one 10 frame super in place, wait until about 6 of its center frames are drawn comb and filled with nectar, reposition those frames by moving the filled frames towards the outer box walls and placing the undrawn frames in the center. At that point, add the 2nd 10 frame super of foundation, and so on for the 3rd or 4th super of foundation. Redundantly, I say getting foundation drawn into comb requires more labor time and a lot more inspections to determine correct timing for each super installation. All of these problems is what makes the production of comb honey into a specialty that can only be done by highly knowledgeable beekeepers like Gene Killion and his father, Carl. Today, you can almost tell if a person is over 50 years old or under 50 years old. The younger people keep studying a comb honey section and finally ask some stupid question like: What do you

do with that "thing"? or How do you get the honey OUT? or What do you do with the wax after you have eaten the honey out of it? or Do you eat it with your fingers, spoon, or fork; and how do you spread it on toast? When I started beekeeping back in those depression days of 1933, many people didn't have a job, so there wasn't much bottled honey around because bottles cost money and extractors cost a fortune. Hence, all of my honey was produced in 4" x 4" basswood comb sections which I was able to sell for the small fortune of 25 cents for a 12 ounce comb section and that 25 cents provided my 15 cent Saturday matinee movie ticket and a 10 cent bag of popcorn and that was really living "high on the hog". The truth of my story is my Scottish mother took the money and put it in the Bank of Bethesda drawing 1% interest, and she gave it back to me on my wedding day in 1943 as a wedding surprise just before I was sent away to be a scientist for The Manhatton Project to build the atomic bombs used on Japan. False teeth and eating comb honey are not a good pair, but I grew up on comb honey and still eat a lot (the size of my stomach indicates TOO much) even with false teeth.

KILLING or CONTROL of the TRACHEAL MITE - Many beeHAVERS and even some beeKEEPERS don't bother to treat for the Tracheal mite. Since it is microscopic and hence not seen by humans, their bees are assumed clean and not infected by this pest.When the colony is found dead usually in January with few dead bees in the hive, but plenty of honey still present, generally the Tracheal mite has "won" again. The only government approved treatment for the Tracheal mite is insertion of 50 grams of menthol in the brood chamber in warm to hot weather, which I would think would be in mid-August in the Illinois area. Menthol installed in Maryland AFTER SEPTEMBER 1st usually fails to work. If the use of menthol interferes with nectar collection of alfalfa or goldenrod or some other crop, you will have to decide whether you want the honey or dead bees. The use of menthol at temperatures lower than about 80 degrees does NOT work, because the menthol does not sublime from a solid into a gas until it is heated to 85 degrees. Menthol KILLS the tracheal mite! Dr. Diana Sammataro has pioneered the use of grease patties (plain, NO terramycin) for the CONTROL of the Tracheal mite; but the patties do NOT kill the mites, just "confuses" which bee host to cling to. These patties HAVE TO BE present in the brood chamber continuously all 12 months of the year , including nectar flow periods, to be effective! Grease patties do control the Tracheal Mite, but their use is labor intensive for the beekeeper, because unless they are constantly present all year the bees become overwhelmed by the mites. I much prefer using Menthol on August 15th and I have never lost a colony to tracheal mites.

ONE OTHER IMPORTANT DISEASE USUALLY OVERLOOKED - NOSEMA disease, although rarely killing a colony, weakens the health of the bees that shortens their lives dramatically and reduces their activity so they just can't make a decent crop of honey. This is a disease of the gut and causes the bee to suffer diarrhea. I ask you - How much work can you do when you have the "runs"? Researchers have estimated that approximately 60% (over half) of all the bees in the country suffer nosema disease in the spring after a long winter confinement. For a cheap price of about $2/colony, you can feed the colony 2 teaspoons of Fumidil-B dissolved in 2 gallons of 2:1 sugar syrup in October or November, and your bees will be free of the Nosema disease the following year. I don't guess whether my bees are infected or not; I automatically treat with Fumidil-B every fall, because I would rather make a good crop of honey rather than save $2/colony.

HARVESTING and PROTECTING DRAWN COMB - Honey should NOT be removed from the colony until it is CAPPED with wax, because uncapped honey is not yet "ripe" and the moisture content of unripe honey is too high, so the honey might ferment and spoil. Leave the uncapped honey on the bees for their winter stores. I like to get my honey harvested and stored by July 4th, primarily because it is so much easier to extract when it is warm like 90-95 degrees than when the honey cools to 70-75 degrees. There are about 4 different methods used for harvesting, but only two are fast and easy, while the other two are slow or cause stinging. Theoretically, by inserting a Porter Bee Escape in the inner cover hole, the bees will leave the honey supers and go below into the brood chamber, but it does NOT work unless the temperature is chilly and bee wants the warmth of the cluster, so there is little use for this bee escape in our state. Most new hobbiest harvest using a bee brush to brush away the bees off a frame, and these bees can become very angry and reciprocate with a sting. You would too, if someone knocked you out of your chair with a broom. In these times of public fear of bees, don't upset your neighbors by making your bees mad, or you may find yourself facing a new town or county ordinance that says "Beekeeping is prohibited in this area". The best harvest procedures are the use of a Fume Board and chemical or a bee blower. The chemicals STINK, and the bee blower is expensive. A fume board is much like an framed inner cover with a piece of absorbent cloth over the inner cover face. You sprinkle one or 2 teaspoons of BEE-GO on the cloth, place the fume board on the top super, wait 3-4 minutes, remove the super now empty of bees, and go to the next super. If you are rich enough to afford about $250, buy a BEE BLOWER. Remove a super, stand it on end near the hive front, and blow the bees out of the super into the grass. Unlike humans, they don't get mad, because they don't understand that this is robbing. BEE-GO is butyric anhydride which has an odor much worse than rotten eggs, vomit, or skunk; and it does not wash away very easily; but it works! Don't get "sucked in" by HONEY ROBBER, which is nothing more than Bee-Go with the addition of Oil of Cherries to mask the odor of butyric anhydride, but it still STINKS. I much prefer benzaldehyde, the odor of oil of almonds, very pleasant; but very difficult to find. My partner and I can use two Fume Boards, putting just 2 teaspoons of any of chemicals on each board, and remove 20 supers per hour, one each 3 minutes!

After you have extracted this honey, you have a sticky mess and drippy frames. Let your bees do the cleanup of the frames, comb, and supers by piling 5-6 of these wet supers on the inner cover of a strong colony, and of course seal all openings that allow the entry of robber bees. The frames will be dry and very clean in a few days, and the honey that is saved will be winter food for your colony below. For years, I have written, talked, and even preached that "DRAWN COMB IS A BEEKEEPER'S MOST VALUABLE POSSESSION, and still people let the wax mothes ruin their combs before next season. It is so simple to protect your drawn comb. Select the place you are going to keep these supers of comb for the next 9 months, stack them 10 high with a teaspoon of the chemical para-dicloro-benzene (PDB) on the tops of the frames of each super and 3-4 teaspoons of PDB on the frames of the top super, cover the stack and seal the cracks between supers with masking tape. This might have to repeated every 4-6 weeks in warm weather, but it will not have to be touched after the average temperature is below about 50 degrees. Next April, just let the supers "air-out" for 1-2 days before installation.